

# Low Impact Development

*For a “green and growing” Capital Region*

BY JOHN IMES



Rain gardens and drainage swales assist with runoff and act as a living filtration system.

A key challenge to protecting and enhancing the quality of our lakes, streams and drinking water is better management of stormwater runoff.

Runoff from roads and development can contain motor oils and grease, heavy metals and contaminants, including pesticides, fertilizers and other toxins that are harmful to waterways. What's more, during a one-inch rainfall, a single acre of hard surface will generate 25,000 gallons of runoff versus only 2,700 gallons from an undeveloped site.

Traditional methods of stormwater management use elaborate and expensive concrete culverts, pipelines and other structures to channel untreated runoff from streets, parking lots and rooftops to waterways. Increasingly, however, leading developers, builders and communities are advocating low-impact development and the use of green infrastructure to capture and re-use stormwater before it enters waterways.

In this issue of Making Green Sense, we highlight leading examples of environmentally responsible stormwater management practices and ways developers and communities can work together to achieve water quality goals.

## Innovative stormwater strategies

**RAIN GARDENS AND DRAINAGE SWALES:** Wetlands act as living filtration systems to remove pollutants from runoff, but creating or restoring wetlands in highly developed areas is not easy. Rain gardens can act as mini-wetlands by providing landscaped depressions to catch and absorb runoff and allow it to slowly seep into the ground.

**CISTERNS AND RAIN BARRELS:** These also collect stormwater for landscape irrigation or for non-potable uses such as toilets.



Rain barrels and cisterns collect water for landscape irrigation.

**GREEN ROOFS:** Defined as basically any roof substantially covered with vegetation, green roofs can retain one or more inches of rainfall, provide insulation to reduce heating and cooling costs, double a roof's life, and contribute to a quieter, healthier, more sustainable urban environment.

**POROUS PAVEMENT:** Asphalt, concrete and paving blocks can be designed to allow water to pass through to a subbase of stone aggregate with enough void space for stormwater storage and recharge.

### Zero runoff streets?

Instead of installing traditional stormwater culverts and piping systems, some communities are creating natural drainage systems along streets and sidewalks using native landscape and swales to catch and filter runoff. One such project in Seattle reduced the volume of stormwater runoff by 98 percent over a two block-wide area over two years.

### New low impact development

A \$20 million environmentally friendly housing development in Neenah will be among the first of its kind built without

*continued on page 14*



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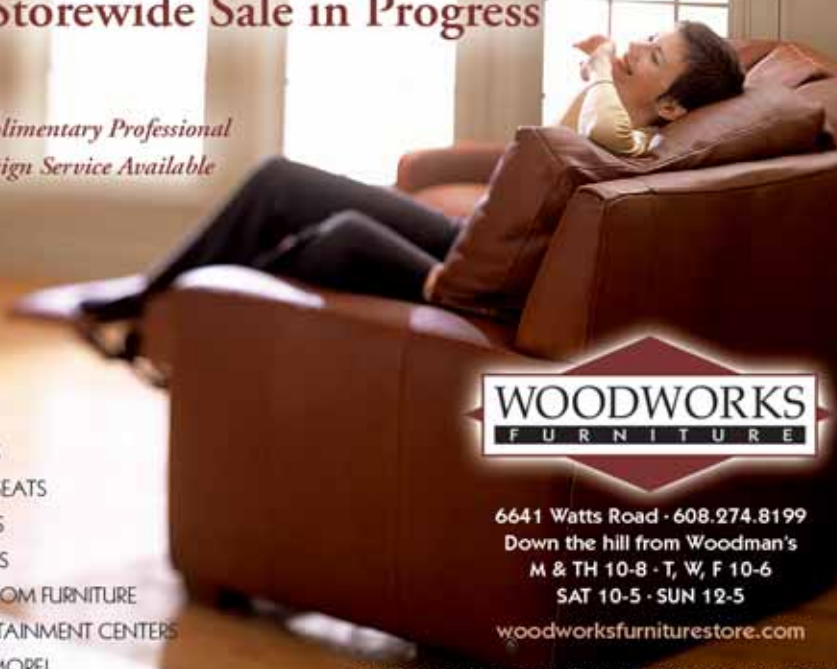
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## Low Impact Development

*continued from 13*

storm sewers. Leon Church, president of Casaloma Development Corp. in Appleton, plans to develop the property as a "green community" with all stormwater treated on-site through a series of biofilters, rain gardens and infiltration beds. The condominium development will recycle all construction waste and be built to Wisconsin ENERGY STAR® and Green Built Home standards as well as use heat pumps and tankless solar water heaters. Church has also applied to Wisconsin's Green Tier program, which encourages companies to achieve superior environmental performance. Green Tier represents the next generation of environmental management with an emphasis on environmental performance, flexible compliance, legal accountability, management systems and other incentives.

Another Green Tier development is the Clean Waters Initiative implemented by Veridian Homes in partnership with Dane County, the city of Madison, the city of Sun Prairie and the state Department of Natural Resources. Veridian will use "best management practices" and other techniques such as soil-erosion socks and contractor training to reduce sediment and other pollutant runoff well beyond current regulatory standards.

### Green-it-yourself resources:

- Building Better II — A Guide to America's Best New Development Projects  
[www.sierraclub.org/buildingbetter](http://www.sierraclub.org/buildingbetter)
- Clean Waters Initiative (Green Tier Charter)  
[www.dnr.state.wi.us/org/caer/cea/environmental/participants/clearwaters/index.htm](http://www.dnr.state.wi.us/org/caer/cea/environmental/participants/clearwaters/index.htm)
- Rooftops to Rivers: Green Strategies for Controlling Stormwater, Natural Resources Defense Council,  
[www.nrdc.org/water/pollution/rooftops/contents.asp](http://www.nrdc.org/water/pollution/rooftops/contents.asp)
- Low Impact Development Center  
[www.lowimpactdevelopment.org](http://www.lowimpactdevelopment.org)
- Seattle Public Utilities — Natural Drainage System Program  
[www.seattle.gov](http://www.seattle.gov)



Above: This big-box retailer created green areas and rain gardens to catch the runoff from the parking lot.

Below: Green roofs can retain one or more inches of rainfall and provide insulation to reduce heating and cooling costs.



Big-box retailers can also use low-impact development strategies and green infrastructure to reduce development impacts, achieve stormwater management goals and create more livable places to shop. A study involving Target Corporation and the United States Environmental Protection Agency identified strategies including green roofs, bioretention basins, rain gardens and porous pavement as an alternative to typical end-of-pipe stormwater ponds.

Developers that utilize low-impact development and Green Tier strategies should receive faster approvals and other incentives such as density bonuses and fee discounts to encourage green infrastructure use by developers and communities statewide.

We can keep the Capital Region green and growing through green infrastructure investments, low-impact development and Green Tier strategies. We can also improve the quality of our lakes, streams and drinking water and foster more sustainable development for the benefit of our environment and economy. ■



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